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of life, including a discussion of the origin of life and the history of death ; stimuli and their actions ; and the mechanism of life.

No detailed discussion of the book need be entered upon, since it is already fairly well known in the original form. The translation has been admirably done by Professor Lee. The smooth and readable German of Verworn has been converted into easy and idiomatic English.—C. R. B.

Some popular books.

ALICE LOUNSBERRY is the author of *A guide to the wild flowers*² recently published. Mrs. Ellis Bowan has had charge of the illustrations, which consist of sixty-four colored and one hundred black and white plates, and fifty-four diagrams. Dr. N. L. Britton has written a brief introduction. The numerous attempts to provide easy and interesting ways of recognizing plants indicate a real demand and one that is very hopeful. Nature study is finding a prominent place in the schools, and any book which stimulates it properly is to be commended. The plants selected for this book are well illustrated and fairly well described, and should be recognized easily by the intelligent observer. Although strictly taxonomic, the plants are presented in ecological groups ; as for example, "plants growing in water," "plants growing in moist soil," "plants growing in dry soil," etc., etc.—J. M. C.

ANOTHER RECENT book intended to encourage Nature study is *Field, forest, and wayside flowers*,³ by Maud Going (E. M. Hardinge). It professes to be "untechnical studies for unlearned lovers of nature," and is a charming book. The author does not deal in the usual fairy tales, but evidently knows what things are and what they are for, so far as current knowledge goes. The titles of the chapters are suggestive of the topical character of the book. A few of them are as follows : crocuses, dandelions, the flowering of the forest trees, green leaves at work, grasses, climbing plants, a handful of weeds, in winter woods, etc. The photographs are especially excellent, and some of our common plants are made to stand out with remarkable distinctness. The book can be commended to all those who wish to come into contact with nature in an untechnical way, and also to teachers in charge of nature study.—J. M. C.

EDWARD KNOBEL has attempted to make the identification of the grasses, sedges, and rushes of the northern United States an easy matter.⁴ The plates

² *A guide to the wild flowers.* 8vo. pp. xvii + 347. New York : Frederick A. Stokes Company. 1899.

³ *Field, forest, and wayside flowers.* 8vo. pp. xvi + 411. New York : The Baker & Taylor Company. 1899. \$1.50.

⁴ *The grasses, sedges, and rushes of the northern U. S.* 8vo. pp. 78. *pl.* 28. Boston : Bradlee Whidden. 1899. \$1.00.

are numerous, and one of the features of the book is the series of marginal illustrations of essential structures opposite each description. Just how easy this will make the determination of species in these perplexing groups can be known only after experience. It is a question whether anything in clearness has been gained by substituting ear and earlet for spike and spikelet.—J. M. C.

A NEW NATURE READER has been provided by Kate Louise Brown, under the title *The plant baby and its friends*.⁵ While the title suggests that the author has concerned herself with plant seedlings, a reading shows that the adult plant has received most consideration. Facts concerning many common plants are presented in the form of stories intended to be used as supplementary matter with younger children; and for such purpose the book should find a place. Some objectionable features of many books intended to assist children in nature study are happily absent from this book. Among these may be mentioned the treatment of fertilization and nomenclature. The stories concerning pollination are told in such an interesting way that even the youngest pupils should be interested. In some cases attempts at coloring as well as attempts at drawing lessons in morals from the plants studied have done violence to the facts, and the unfounded story of Egyptian mummy wheat is told once more. But aside from a few such errors it should be said that the plan and spirit of the book will make it very helpful with younger pupils.—OTIS W. CALDWELL.

FREDERICK LEROY SARGENT has produced an interesting little book for young people entitled *The corn plants, their uses and ways of life*.⁶ Of course the phrase "corn plants" means cereals. The first pages are devoted to the mythology of the cereals, embracing the stories of classical antiquity to which allusions are so frequent in more modern literature.

For the botanist the chief interest is found in those pages which discuss the ecological adaptations of these important plants. A great deal of attention is given to such questions as protection against wind, weight, and excesses of moisture and dryness, several new drawings illustrating the structures which assist the plants in these respects. Few plants seem to be more interesting from the ecological standpoint, when one considers that they are grown in exposed places, absolutely unassisted by close relation with other plants which might serve to modify the effect of the wind or the sunlight.

In the section on the advantages of cereals as food-plants the author gives interesting descriptions of the methods of using cereals and the extent

⁵ *The plant baby and its friends*. 8vo. pp. 155. Boston: Silver, Burdett & Company. 1899. 48 cents.

⁶ *The corn plants, their uses and ways of life*. 8vo. pp. v + 106. *figs.* 32. Boston: Houghton, Mifflin & Company. 1899. 75 cents.

and geographical distribution of the various sorts. The book is full of good information put in an attractive style and should find abundant welcome.—O. W. CALDWELL.

MINOR NOTICES.

THE THIRD FASCICLE of "Illustrations de la Flore du Congo," by Willem van Duman and Durand, has just appeared, containing twelve plates, with descriptive text. The plates are exceedingly handsome, and their number has now reached thirty-six.—J. M. C.

A NEW classification of the Leucobryaceæ is proposed by M. Jules Cardot in *Revue Bryologique* 26: 1-8. *pl. 1.* 1899. It is based chiefly upon the anatomical characters of the leaves as shown by cross-sections, such as the presence or absence of sclereides, and the form and arrangement of the chlorophyllose cells.—C. R. B.

SOME RESEARCHES of Loeb upon the influence of alkalies and acids upon embryonal development and growth⁷ led to results which may have important applications to the growth of plants. He finds that weak alkalies (even .006% NaHO) accelerate the development and growth of larvæ of Arbacia (a sea-urchin) and the embryos of Fundulus (a fish), while weak acids retard. The cause of these actions is to be sought in the effect of the reagents on the oxidative processes of the protoplasm.—C. R. B.

NOTES FOR STUDENTS.

GEORGE J. PEIRCE has been studying the nature of the association of alga and fungus in lichens.⁸ Speaking of the algae he says that "it is neither logical nor sensible to conclude that their unusual position is beneficial to them," as free algæ can thrive, at least for a time, wherever lichens can. "There is no proof that algal cells serving as lichen gonidia are any better off as to food, protection, or situation than the average free algal cells of the same species." Of course the fungus is found to be absolutely dependent upon the alga. The author also affirms that the central body of the gonidial cells of Ramalina, Usnea, and Sphærophorus, is a nucleus, not a pyrenoid.—J. M. C.

HERMANN VON SCHRENK⁹ has been investigating a disease of *Taxodium* known as peckiness, and also a similar disease of *Libocedrus decurrens*. In both cases the wood is destroyed in localized areas, which are surrounded by

⁷ Archiv f. Entw.-mechanik der Organismen 7: 631-641. *pl. 1.* 1898.

⁸ Proc. Calif. Acad. Sci. III. 1: 207-240. *pls. 41.* 1899.

⁹ Eleventh Ann. Rep. Mo. Bot. Gard. 1-55. *pls. 6.* 1899.